Transportation Management Center Pooled Fund Study
Future Direction and Critical Initiatives

The Transportation Management Center (TMC) Pooled Fund Study (PFS) is intended to provide a forum for participants to identify and address operational and human centered issues that are common among agencies that manage and operate TMCs. TMCs are a key tool that is needed by public agencies to monitor and report on roadway and travel conditions, coordinate with local interests in response to changing conditions, and proactively manage and control traffic to mitigate the impacts of congestion and improve the reliability of travel. TMCs also play a critical role in coordinating, supporting and sharing information on roadway and travel conditions that are needed by a variety of different interests that provide a variety of emergency services to the traveling public. TMCs are a key technical and institutional hub bringing together the various jurisdictions, modal interests, and service providers to focus on the common goal of optimizing the performance of the surface transportation system.

TMCs require dedicated management and staff with specialized skills and training, rely on advanced technologies, requires dedicated operating and capital funding, face complex institutional issues in coordinating with service providers in response to incidents, and functions within a time critical environment which is a culture that is drastically different than most agencies are accustom. These demands and constraints present challenges that agencies face on a daily basis without the benefit of having the necessary resources, experience, skills and training. These are challenges that agencies continually face which impacts their ability to efficiently and effectively manage and operate TMCs.

Meeting these challenges and customers' expectations requires pursuing a wide variety of both proven and innovative strategies to realize the full potential of the investment that have and will continue to make in TMCs. Investments that will allow agencies to proactively manage and control traffic in a manner that optimizing the performance and investment that has, and will continue to be made, in the surface transportation system. Investments that will allow TMCs to improve the safety, mobility, and productivity of travel that will also fostering economic growth and development. To deal with limited resources and the increasing complexity involved in managing and operating TMCs, it is essential that practitioners have access to the technical guidance, best practice, training, innovative techniques and technologies, and fact-based tools to assist them in improving the performance and their services.

The TMC PFS provides an opportunity for transportation agencies to collectively take on these challenges and address the issues that are common among agencies that manage and operate TMCs. The TMC PFS also provides an opportunity to facilitate the interaction, sharing of information, and successful practices with a broader audience to advance and improve upon the current state-of-the-practice related to the management, operation, and performance of TMCs. The members of the TMC PFS have identified six critical initiatives and a corresponding series of projects that need to be pursued in order to develop the resources and tools agencies need to address and overcome the challenges that they are facing.

These initiatives and the proposed projects that have been identified build off of and leverage investments that the TMC PFS has already made in previously completed or initiated projects. Within these initiatives the number and actual projects to be pursued will be determined annually based on the resources that are available to the TMC PFS to pursue new projects. These projects will be selected are expected to vary based on the challenges that TMCs are facing, their evolving needs, and their collective priorities based on the resources that are available.

Improving Day-to-Day Operations of TMCs

The effective and efficient management and operation of a TMC directly influences its performance, ability to mitigate the impacts of congestion, and the performance of the roadways it manages. The management and operation of a TMC relies on the availability of the number of staff with the appropriate skills, support resources, and tools to perform the tasks, activities and functions that may be required. This requires managers to be able estimate, schedule, procure, and manage the staff, resources and tools that are either available or required to operate a TMC. Some of these tools may include agency or TMC policies, procedures, protocol, operational strategies, control plans, training manuals, staff estimating and scheduling software, and other resources that staff needed to successfully perform their assigned duties and tasks. Recommended practices and guidance does not exist to assist practitioners on how to develop, train, hire, or contract for staff or support services that are necessary to support the continued management and operation of TMCs. Nationally the only activities that have been pursued to date have been limited to the activities that the TMC PFS has pursued that includes:

- Scheduling of Staffing for Day-to-Day TMC Operations
- TMC Operations Manual

Future projects that may be pursued that build off of and expand upon these initial efforts include:

- TMC Staffing Resources and Guidance for Day-to-Day Operations Phase 2 – Developing Interactive Software Tool
- Predicting Traffic and Roadway Conditions
- Collecting, Processing, Archiving, and Using Data to Operate TMCs
- Data Archiving Subsystem: Concept of Operations, Requirements, and Design
- Data Quality and Requirements

Enhancing Business Management of TMCs

TMCs require a commitment from local agencies to provide the capital, operating and maintenance funds that are required to implement, manage and operate a TMC. Often agencies pursue the deployment of TMCs without providing the proper business foundation to support the justification of the initial or continued expenditure of funds, integrated the potential benefit of the TMC into the strategic and program plans of an agency or region, estimated the future impact a TMC may have on the performance of the surface transportation system, and quantified the resources required to effectively manage the operation and evolution of a TMC. Agencies are faced with continuously managing the evolution of based on the desire to expand its functionality, electronically share information with stakeholders, replace technologies, expand the area of coverage, and meet the continuously changing needs the many stakeholders of the TMC in a region. Effective and efficient business management of TMCs requires that the business planning, corresponding business plans, management systems, monitoring, evaluation, and reporting on its performance. This also requires that these plans, processes and performance of the TMC are integrated into the appropriate strategic plans, programming, asset management, performance monitoring, and reporting within an agency and region.

Guidance, lessons learned, and best practices will provide agencies and practitioners with the needed directions and resources to improve the collaboration, coordination and planning between public agencies to enhance the business planning, management, resource allocation decisions, performance monitoring, and reporting on performance of TMC and its influence on other business processes within an agency and region. Recommended practices, guidance and business planning tools does not exist or have not been developed to assist practitioners on the business planning and management of TMCs. Nationally the only activities pursued to date have been limited to the activities that the TMC PFS has pursued that includes:

- TMC Business Planning and Plans Handbook

Future projects that may be pursued that build off of and expand upon these initial efforts include:

- TMC Business Planning Software
- TMC Multi-year Program Plans
- TMC Asset Management

Developing TMCs and Managing Their Evolution

The planning, design, implementation and how the evolution of a TMC is managed will influence its reliability, effectiveness, efficiency, and operational resources that are require. Often agencies pursue the deployment of TMCs without providing the proper foundation to support the planning, design, implementation, operation, and maintenance of the facilities throughout their life cycles, the justification of the continued expansion and evolution of their systems, the integration of the potential benefit of the TMC into the strategic and operations plans of an agency or region, and estimation of the future impact a TMC may have on the performance of the surface transportation system. TMC operating agencies are faced continuously with managing the evolution based on the desire to expand its functionality, share information electronically with stakeholders, replace technologies, expand the area of coverage, and meet the continuously changing needs that many TMC stakeholders in a region. Improved collaboration and coordination between agencies are required to enhance the planning, design, management, and decisions that are made throughout the life cycle of a TMC.

Recommended practices, guidance and tools does not exist or have not been developed to assist practitioners in developing and advancing the activities related to the key phases of the life cycle of a TMC and in managing its evolution. Nationally the only activities pursued to date have been limited to the activities that the TMC PFS has pursued that includes:

- Configuration Management for Transportation Management Systems
- Transportation Management Systems Maintenance Concept and Plans
- Developing and Using the Concept of Operations for Transportation Management Systems
- TMC Performance Monitoring, Evaluation and Reporting Handbook
- Migration Plans and Procedures for Transportation Management Systems

Future projects that may be pursued that build off of and expand upon these initial efforts include:

- TMC Building and Control Center Design Handbook
- Developing and Using Requirements for Transportation Management Systems
- Regional and Multi-System Configuration Management for Transportation Management Systems
- Tool to Support Regional and Multi-System Configuration Management
- Statewide TMC Concept of Operations and Requirements
- Recovery and Redundancy of TMC
- Temporary or Portable TMCs

Developing and Delivering Roadway and Travel Condition Information

The delivery of en-route roadway and travel condition information is critical to allowing TMCs to be able to effectively manage and control traffic. TMCs play the primary role in collecting, developing and delivering en-route information to the traveling public. The ability to effectively and efficiently deliver information to motorists will allow agencies to manage travel in response to changing roadway and traffic conditions. This capability will allow agencies to open or close lanes of traffic, restrict use of certain lanes to specific types of vehicles, close sections of roadway, suggest alternative routes, display travel time information, inform motorists of actions that may be required to take and conditions they may encounter if they continue on this roadway.

The focus area will emphasize on research, development of technical guidance, and filed operational tests as related to: (1) procedures, methods, techniques, ad tools to support and improve collecting, processing, developing, and delivering roadway and travel condition information; (2) human factors and driver

behavior associated with information display and dissemination; (3) policy, institutional, and operational issues; and (4) technologies, information requirements, and resources required to proactively manage traffic in real-time in response to changing conditions. Recommended practices, guidance and business planning tools does not exist or have not been developed to assist practitioners in developing and delivering en-route travel condition or travel time information to motorists. Nationally the only activities pursued to date have been limited to the activities that the TMC PFS has pursued that includes:

- CMS Messaging and Operations Handbook
- Impacts of Dynamically Displaying Messages on CMS

Future projects will build off those efforts as well as explore issues related to:

- Driver behavior in response to the disseminated information (e.g., travel time, travel time at diversion points on a freeway system, impact of displaying travel times for alternative routes)
- Procedures and requirements for providing road conditions and travel time information.
- Displaying Travel Time and Roadway Condition Information at Approaches to Freeway Entrances
- Methods for TMCs to develop and distribute predictive travel time information.
- How to display travel times on the internet and across regions

Developing, Training, Hiring, and Contracting for TMC Staff and Services

One of the most important components that influence the operation of a TMC is the availability of qualified staff. TMCs require dedicated management and staff with the specialized knowledge, skills, ability, and training to efficiently and effectively perform the necessary tasks and deliver the vita service and functions. Recommended practices and guidance does not exist to assist practitioners on how to develop, train, hire, or contract for staff or support services that are necessary to support the continued management and operation of TMCs. Nationally the only activities that have been pursued to date have been limited to the activities that the TMC PFS has pursued that includes:

- TMC Operator Requirements and Position Descriptions Phase 1
- TMC Operator Requirements and Position Descriptions Phase 2 – Interactive Software

Future projects that may be pursued that build off of and expand upon these initial efforts include:

- Requirements and Position Descriptions for TMC Support Staff
- Procuring, managing and evaluating the performance of contracted TMC services
- Knowledge Needs Assessment and Workshops for TMC Owners, Manager and Staff
- Training program template and opportunities for TMC staff
- TMC operator certification program development and implementation
- Recommended 2-year collage program for TMC operators and technicians

Knowledge and Information Sharing

This focus area is intended to provide a more efficient use of resources, facilitate sharing of resources developed and technological and institutional experiences gained, assist in knowledge management with compiling and warehousing information, support technology transfer on innovative applications, and coordinate with other Pooled-Fund Studies, national coalitions and organizations with TMC interests. Current TMC PFS efforts within this focus area include:

- TMC PFS Web Site
- TMC Clearinghouse Development and Initiation
- TMC Workshop Development and Proposal for Delivery
- TMC PFS Communication Plan and Tools

Potential projects within this focus area will build upon previous efforts and focus on facilitating peer-to-peer information sharing and exchanges, enhancing knowledge management and information warehousing, and developing innovative training and technology transfer techniques and activities to raise

the awareness and need to advance traffic management and control practices. These potential projects include:

- TMC Marketing Handbook and Toolbox
- TMC Clearinghouse Support Services – Phase 2
- TMC Workshop Delivery – Phase 2